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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/630,659      | 07/31/2003  | Sung Jin Han         | P24020              | 8258             |

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EXAMINER

LEUNG, PHILIP H

ART UNIT PAPER NUMBER

3742

DATE MAILED: 07/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                               |                            |  |
|------------------------------|-------------------------------|----------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>10/630,659 | Applicant(s)<br>HAN ET AL. |  |
|                              | Examiner<br>Philip H Leung    | Art Unit<br>3742           |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

### DETAILED ACTION

1. The drawings filed on 7-31-2003 are acceptable.
2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 8 is rejected under 35 U.S.C. 102(b) as being anticipated by Yoshino et al (JP 1-117293).

Yoshino shows the claimed method for controlling a variable-frequency inverter microwave oven, comprising the steps of a) rectifying and smoothing a commercial AC voltage into a DC voltage; b) varying a switching frequency of a switching device with a variation in said DC voltage; and c) performing a switching operation of said switching device at the varied switching frequency to generate an AC voltage, and driving a magnetron using the generated AC voltage as it shows a microwave oven comprising a magnetron 5 for generating electromagnetic waves; direct current voltage generation means 17 for rectifying and smoothing a commercial alternating current voltage 1 to generate voltage, switching means 21 for performing a switching operation based on said DC voltage from said voltage generation means; variable-frequency control means 13 for varying a switching frequency of the switching means according to a level of the current of the DC voltage to maintain the AC voltage from the switching means at a constant level and magnetron drive voltage generation means 2, 3, 4 for converting said AC

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voltage from said switching means into a high-power DC voltage and transferring the converted DC voltage said magnetron to drive it (see the English abstract and Figures 1-4).

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-7, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshino et al (JP 1-117293), in view of Ryu et al (US 2004/0118832 A1) or Maehara et al (US 6,075,715).

Yoshino shows a variable-frequency inverter microwave oven comprising: a magnetron 5 for generating electromagnetic waves; direct current voltage generation means 17 for rectifying and smoothing a commercial alternating current voltage 1 to generate voltage, switching means 21 for performing a switching operation based on said DC voltage from said voltage generation means; variable-frequency control means 13 for varying a switching frequency of the switching means according to a level of the current of the DC voltage to maintain the AC voltage from the

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switching means at a constant level and magnetron drive voltage generation means 2, 3, 4 for converting said AC voltage from said switching means into a high-power DC voltage and transferring the converted DC voltage said magnetron to drive it (see the English abstract and Figures 1-4). Therefore, Yoshino shows every feature and structure as claimed except for the showing of the use of a plurality of switches as the switching means and the use of the voltage level of the DC voltage instead of the current level of the DC voltage as the circuit monitoring parameter to control the switching frequency. Ryu shows a high frequency heating device with an inverter circuit 400 for generating a high frequency heating output comprising: a direct current voltage generation means 200, 300 for rectifying and smoothing a commercial alternating current voltage 100 to generate voltage, switching means 700 for performing a switching operation based on said DC voltage from said voltage generation means including a plurality of switches; variable-frequency control means 600 for varying a switching frequency of the switching means according to a level of the DC voltage (by voltage detector 500) to maintain the AC voltage from the switching means at a constant level (see Figures 6 and 9 and paragraphs [0028] – [0030]). Maehara also shows a switching power supply for an inverter circuit to use voltage detector to monitor the DC voltage to control the switching frequency of the switches Q1, Q2 to control the power output (see Figure 16 and col. 7, lines 46-57). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yoshida to use a voltage detector instead of a current detector for monitoring the DC voltage output to control the switching frequency of the switches of the inverter for better control of the output power, in view of the teaching of Ryu or Maehara. In regard to claims 7 and 10, see Ryu, paragraph [0063]. In regard to claim 3, Yoshida shows the use of a microcomputer (MP 14) in a

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microwave oven to be routine. In regard to claims 4 and 9, the use of a protection circuit (element 8) to protect the switching circuit in an inverter power supply is well known as shown in the admitted prior art of Figure 2.

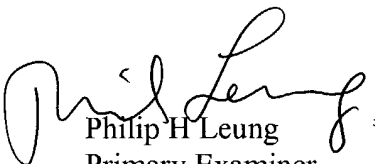
6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Chandler et al (US 3,593,103) and Cho et al (US 6,335,529) are further cited to show systems with an inverter power supply having similar claimed features.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Philip H Leung whose telephone number is (703) 308-1710.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on (703) 305-5766. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Philip H Leung  
Primary Examiner  
Art Unit 3742

P.Leung/pl  
7-21-2004